Gender gaps in the labour market: the role of parental leave policies

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Introduction

- Parental leave regulations are a central element of family policies in most OECD countries
- An objective of parental leave regulations is to increase women's employment and earnings in the medium run by encouraging job continuity after birth; however, prolonged periods of absence from the workplace might lead to loss of human capital and weaker labour market prospects after returning to work
- Despite the public policy debate and the empirical interest on the effects of parental leave programs, there is surprisingly little formal analysis of parental leave policies in the presence of search and matching frictions
- Our aim is to introduce parental leave policies in a labour search and matching model and study the effect of parental leave policies on unemployment and wages

Large differences in parental leave policies across OECD countries

Maternity leave duration and female unemployment rate in 35 OECD economies (2015)

	Paid maternity leave		Unemployment rate female (%) 15-64 years old
	Length, in weeks	Average payment rate (%)	
Average OECD	17.7	74.6	7.6
Standard deviation	8.4	25.7	5.1
Maximun	43.0	100.0	28.1
Minimun	0.0	0.0	3.1
Uncond. correlation coeffcient with female unemployment rate	0.37*	0.06	
Cond. correlation coeffcient with female unemployment rate (1)	0.35*	0.07	

Sources: OECD Stats and OECD Family Database

(1) Refers to the partial correlation coefficient controlling for: (i) the unemployment net replacement rate for two earners married couple with two children ; (ii) the GDP per hour worked at constant PPPs prices and; (iii) the union trade density and; (iv) The average maternity payment rate. * denotes statistical significance at the 10% level.

The project

- The model
- Segmented labour markets
- Common labour market
  - Two-type wage bargaining
  - Male wage bargaining with female wage adjustment
- Numerical calibration

The model

- Measure 1 of risk-neutral, infinitely-lived workers and risk-neutral, infinitely-lived firms
- Workers and firms discount future payoffs at a common rate r and capital markets are perfect
- Time is continuous
- There are two types of workers $i = m, f$ (m=male, f=female); type-i labour force N_i is constant with $N_m + N_f = 1$
- Workers can be either unemployed or employed; if employed, they can either be working or on parental leave
- Matching unemployed workers and job vacancies is costly

Firms

- Constant-returns-to-scale production technology with labor as the unique production factor, which generates an instantaneous profit equal to the difference between the constant labor productivity A_i and the labor cost w_i
- Filled positions can be either destroyed at hazard rate s_i or interrupted at hazard rate σ_i if the worker moves to the status of parental leave
- While the worker is on leave the firm incurs a net productivity loss ψ_i per period until the individual returns to his job at hazard rate γ_i

Workers

- An unemployed individual gets value b_i
- Employed workers earn the endogenous wage w_i, and can either lose their jobs at rate s_i or move to the status of parental leave at rate σ_i
- A worker on parental leave enjoys value z_i and returns to the job position at rate γ_i
- The inverse of γi represents the average duration of the parental leave

Segmented labour markets

- Men and women apply for different jobs: there is a different job market i for each type i
- The matching function in each market i is $m_i = m(u_i, v_i)$, where u_i denotes number of unemployed type-i workers and v_i the number of vacancies for type-i
- θ_i represents the vacancy-unemployment ratio, also known as market tightness, in market i
- The aggregate rate at which unemployed workers of type i find jobs is $p(\theta_i)$
- The aggregate rate at which vacancies are filled is $q(\theta_i)$

$$p(\theta_i) = \theta_i q(\theta_i); p'(\theta_i) > 0, q'(\theta_i) < 0$$

Value functions for firms

The values of a type-i vacancy V_i, type-i filled job J_i and type-i worker on leave X_i are given by:

$$rV_i = -c + q(\theta_i)(J_i - V_i)$$

$$rJ_i = A_i - w_i - \sigma_i(J_i - X_i) - s_i(J_i - V_i)$$

$$rX_i = -\psi_i + \gamma_i(J_i - X_i)$$

Value functions for workers

The values associated with the different type-i worker status - unemployed (U_i), working (W_i) and on parental leave (L_i) - are given by:

$$rU_i = b_i + p(\theta_i)(W_i - U_i)$$

$$rW_i = w_i - s_i(W_i - U_i) - \sigma_i(W_i - L_i)$$

$$rL_i = z_i + \gamma_i(W_i - L_i)$$

Additional standard assumptions

- Free entry: firms open type-i vacancies until the expected value of doing so becomes zero

$$V_i = 0$$

- Nash barganing: wages are the result of bilateral Nash bargaining

$$w_i = \arg\max \left[W_i(w_i) - U_i\right]^{\beta_i} \left[J_i(w_i)\right]^{1-\beta_i}$$

where β_i and $1-\beta_i$ represent the bargaining power of the type-i worker and the firm

Dynamics of unemployment

- Type-i unemployment u_i and employment e_i evolve according to:

$$\dot{e}_i = -s_i e_i + p(\theta_i) u_i$$

$$\dot{u}_i = s_i e_i - p(\theta_i) u_i$$

- At equilibrium, $\dot{u}_i = 0$. The equilibrium unemployment level is

$$u_i = \frac{s_i N_i}{s_i + p(\theta_i)}$$

The unemployment rate is

$$\widehat{u}_i = \frac{u_i}{N_i} = \frac{s_i}{s_i + p(\theta_i)}$$

Job creation and equilibrium wage

- Job creation: The expected value to the firm of filling a position must equal at equilibrium the cost of opening the vacancy:

$$J_i = \frac{c}{q(\theta_i)}$$

- Equilibrium wage:

$$\begin{aligned} w_i &= (1-\beta_i)\, b_i + \beta_i A_i + \beta_i c\theta_i \\ &\quad + \frac{\sigma_i}{(r+\gamma_i)} \left(\beta_i \left(c\theta_i - \psi_i\right) - (1-\beta_i)\left(z_i - b_i\right)\right) \end{aligned}$$

  - The first three terms on the RHS are the elements of the standard wage equation in the search and matching model
  - The last term shows that the determination of wages is affected by costs and benefits of parental leave provisions to both firms and type-i workers

Effect of leave duration on type-i unemployment and wages

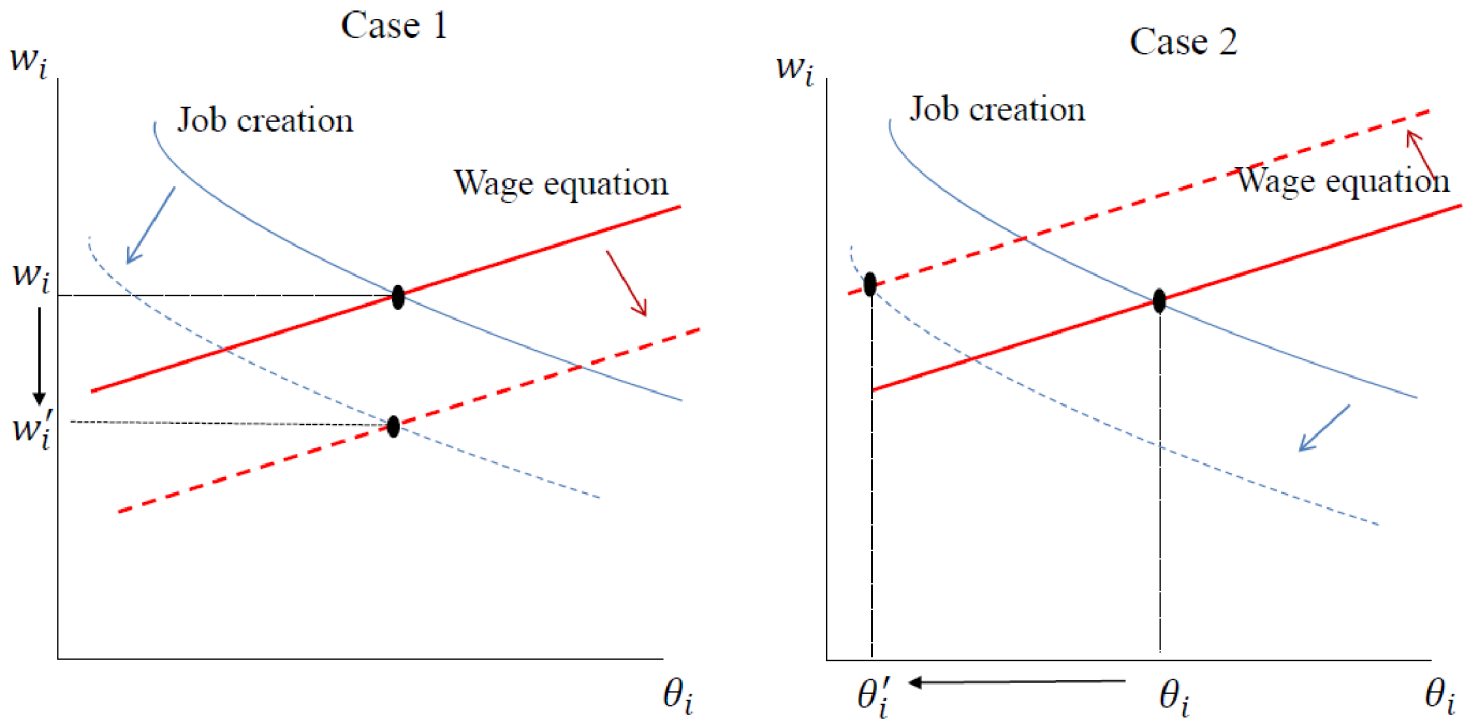
Let $\delta_i = 1/\gamma_i$ be the duration of the leave.

1. If $\frac{z_i - b_i}{\beta_i} > \frac{c\theta_i - \psi_i}{1-\beta_i}$, then $\frac{dw_i}{d\delta_i} < 0$ with ambiguous effect on unemployment
2. If $\frac{z_i - b_i}{\beta_i} < \frac{c\theta_i - \psi_i}{1-\beta i}$, then $\frac{d\theta_i}{d\delta_i} < 0$ $(\frac{du_i}{d\delta_i} > 0)$ with ambiguous effect on the equilibrium type-i wage
3. If $\frac{z_i - b_i}{\beta_i} = \frac{c\theta_i - \psi_i}{1-\beta i}$, then $\frac{d\theta_i}{d\delta_i} < 0$ $(\frac{du_i}{d\delta_i} > 0)$ and $\frac{dw_i}{d\delta_i} < 0$

What happens when parental leave duration increases?

- Direct effect on job creation: the net benefit of opening a vacancy decreases −> decrease in θ_i
- Direct effect on wages
  - The net benefit of the leave relative to the bargaining power is higher for the worker −> decrease in w_i
  - The net benefit of the leave relative to the bargaining power is higher for the firm −> increase in w_i

Figure


Case 1
w_i
Job creation
Wage equation
w_i
w_i'
θ_i
Case 2
w_i
Job creation
Wage equation
θ_i'
θ_i
θ_i

Implications

- The effect of an increase in parental leave duration might differ across genders since it is likely that the value of the parameters, which determine the particular case that applies, differs across genders
- For instance, recent evidence emphasizes gender differences in wage bargaining.
- More generally, simulated labour market outcomes in search and matching models may be sensitive to the calibration of key parameters of the model –> Need for reliable estimates of key parameters

Conclusions (segmented markets)

- Introduced parental leave policies in a labour search and matching model
- Explored the effects of parental leave duration on unemployment and wages with segmented labour markets
- Showed that the effect depends on how the net benefit of the leave relative to bargaining power of the worker and the firm compare
- Illustrated how the simultaneous movement of the job creation and the wage equation curves generate different cases, stressing the need to obtain reliable estimates of key parameters

Extensions (currently working on)

- Common labour market: men and women often compete for the same jobs –> reasonable to expect firms to take this into consideration when assessing the value of posting a vacancy –> although leave entitlements are mainly enjoyed by females in OECD countries (from 54.4% in Iceland to 99.5% in Australia of total users of paid parental leave) we can expect spillovers on male labour market outcomes
- Alternative wage-setting arrangements
- Numerical calibration